

June 29, 2011

Reply to the Office Action dated March 31, 2011

Page 2 of 11

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

Claims 1-22 (canceled).

Claim 23 (previously presented): A thin-film magnetic head substrate comprising:  
a ceramic base with a principal surface; and  
an undercoat film, which is made of an aluminum oxide and which covers the principal surface of the ceramic base, an electrical/magnetic transducer being provided on the undercoat film; wherein

the substrate further includes an intermediate layer between the principal surface of the ceramic base and the undercoat film;

the intermediate layer is made of a material other than the aluminum oxide, has been patterned so as to make a portion of the principal surface of the ceramic base contact with the undercoat film, and has an opening where the electrical/magnetic transducer is not located;

the ceramic base is a single monolithic layer arranged to be the bottom-most layer of the thin-film magnetic head substrate; and

in a region other than the opening of the intermediate layer, as viewed in a direction perpendicular to the principal surface of the ceramic base:

the intermediate layer is present between the undercoat film and the ceramic base; and

the undercoat film is not in contact with the ceramic base.

Claim 24 (canceled).

June 29, 2011

Reply to the Office Action dated March 31, 2011

Page 3 of 11

Claim 25 (previously presented): The thin-film magnetic head substrate of claim 23, wherein the electrical/magnetic transducer provided on the undercoat film includes: a lower magnetic shield film; a magneto-resistive element arranged on the lower magnetic shield film; and an upper shield film, which has been deposited on the lower magnetic shield film so as to cover the magneto-resistive element, and

wherein the intermediate layer has been patterned so as to cover the entire projection of the magneto-resistive element on the principal surface of the ceramic base.

Claim 26 (previously presented): The thin-film magnetic head substrate of claim 25, wherein the intermediate layer has been patterned so as to cover the entire projection of the lower magnetic shield film on the principal surface of the ceramic base.

Claim 27 (previously presented): The thin-film magnetic head substrate of claim 23, wherein a portion of the intermediate layer makes an alignment mark arranged to be used in positional alignment.

Claim 28 (previously presented): The thin-film magnetic head substrate of claim 23, wherein a portion of the intermediate layer makes a pattern representing identification information.

Claim 29 (previously presented): The thin-film magnetic head substrate of claim 28, wherein the identification information includes information about the identity of the ceramic base.

Claim 30 (previously presented): The thin-film magnetic head substrate of claim 28, wherein the pattern representing the identification information has been recorded on a

June 29, 2011

Reply to the Office Action dated March 31, 2011

Page 4 of 11

plurality of areas of the principal surface of the ceramic base, mutually different pieces of the information being distributed to the respective areas.

Claim 31 (previously presented): The thin-film magnetic head substrate of claim 30, wherein the areas are arranged so as to form multiple different thin-film magnetic heads when the substrate is divided.

Claim 32 (previously presented): The thin-film magnetic head substrate of claim 23, wherein the intermediate layer has a thickness of 1 nm to 1  $\mu\text{m}$ .

Claim 33 (previously presented): The thin-film magnetic head substrate of claim 23, wherein the intermediate layer is made of a metal film or a Si film.

Claim 34 (previously presented): The thin-film magnetic head substrate of claim 23, wherein the intermediate layer is made of a material selected from the group consisting of Cu, alloys including Cu, Cr, alloys including Cr, and Si.

Claim 35 (previously presented): The thin-film magnetic head substrate of claim 23, wherein the undercoat film has a thickness of 10 nm to 1  $\mu\text{m}$ .

Claim 36 (previously presented): The thin-film magnetic head substrate of claim 23, wherein the ceramic base is made of an alumina-based ceramic material including 24 mol% to 75 mol% of  $\alpha\text{-Al}_2\text{O}_3$  and at most 2 mol% of an additive.

Claim 37 (previously presented): The thin-film magnetic head substrate of claim 36, wherein the ceramic base further includes a carbide or nitride carbonate of a metal.

Claim 38 (previously presented): A thin-film magnetic head slider comprising:

June 29, 2011

Reply to the Office Action dated March 31, 2011

Page 5 of 11

the thin-film magnetic head substrate of claim 23.

Claim 39 (previously presented): A hard disk drive comprising the thin-film magnetic head slider of claim 38.

Claims 40-43 (canceled).

Claim 44 (previously presented): A method of making a thin-film magnetic head slider, the method comprising the steps of:

preparing the thin-film magnetic head substrate of claim 23; and  
fabricating the electrical/magnetic transducer on the undercoat film.

Claim 45 (currently amended): The thin-film magnetic head substrate of claim 23, wherein the intermediate layer is a flat ~~signal~~single layer that is formed on the principal surface of the ceramic base.

Claim 46 (previously presented): The thin-film magnetic head substrate of claim 23, wherein the intermediate layer is in contact with both of the undercoat film and the ceramic base in the region other than the opening of the intermediate layer, as viewed in a direction perpendicular to the principal surface of the ceramic base.